SR - 710 Tunnel Technical Study
Steering Committee Meeting No.4

South Pasadena Public Library
June 25, 2009

Welcome & Introductions

- Technical Advisory Committee
- Caltrans Staff
- Technical Consultants
- Community Facilitation Consultants

Housekeeping

- Please sign in, full name and affiliation
- Updates or corrections to Roster or contact information
- Break

Today's Meeting Objectives

- Review Exploration effort, data collected and geological conditions for each zone
- Describe what we have heard from public and TAC
- Discuss Committee and public process for review of summary report and next steps

Purpose of the Study

- Consider all practical routes for the extension of Route 710
- Gather information on soil and sub-surface conditions
- Provide for public input and involvement

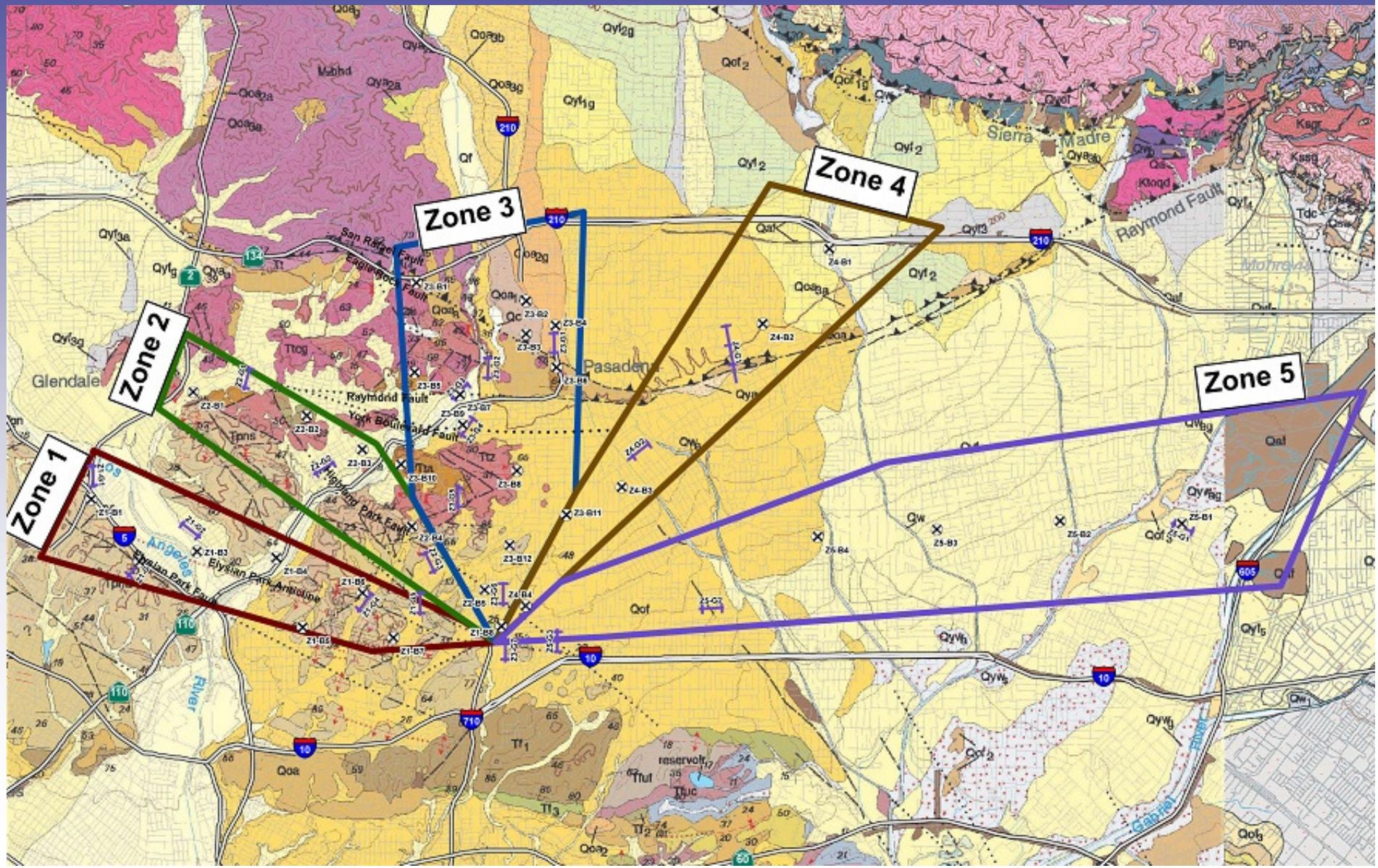
Guiding Principles

- Develop reliable geo-technical information for tunnel options
- Respect Route Neutrality
- Clearly communicate the purpose and scope of the study to solicit public input

Objective of the Exploration Program

- A total of 5 potential zones are investigated
- Collect geotechnical, geological, and hydro-geological information for each zone
- Information will be used for screening purposes

Geological Zones



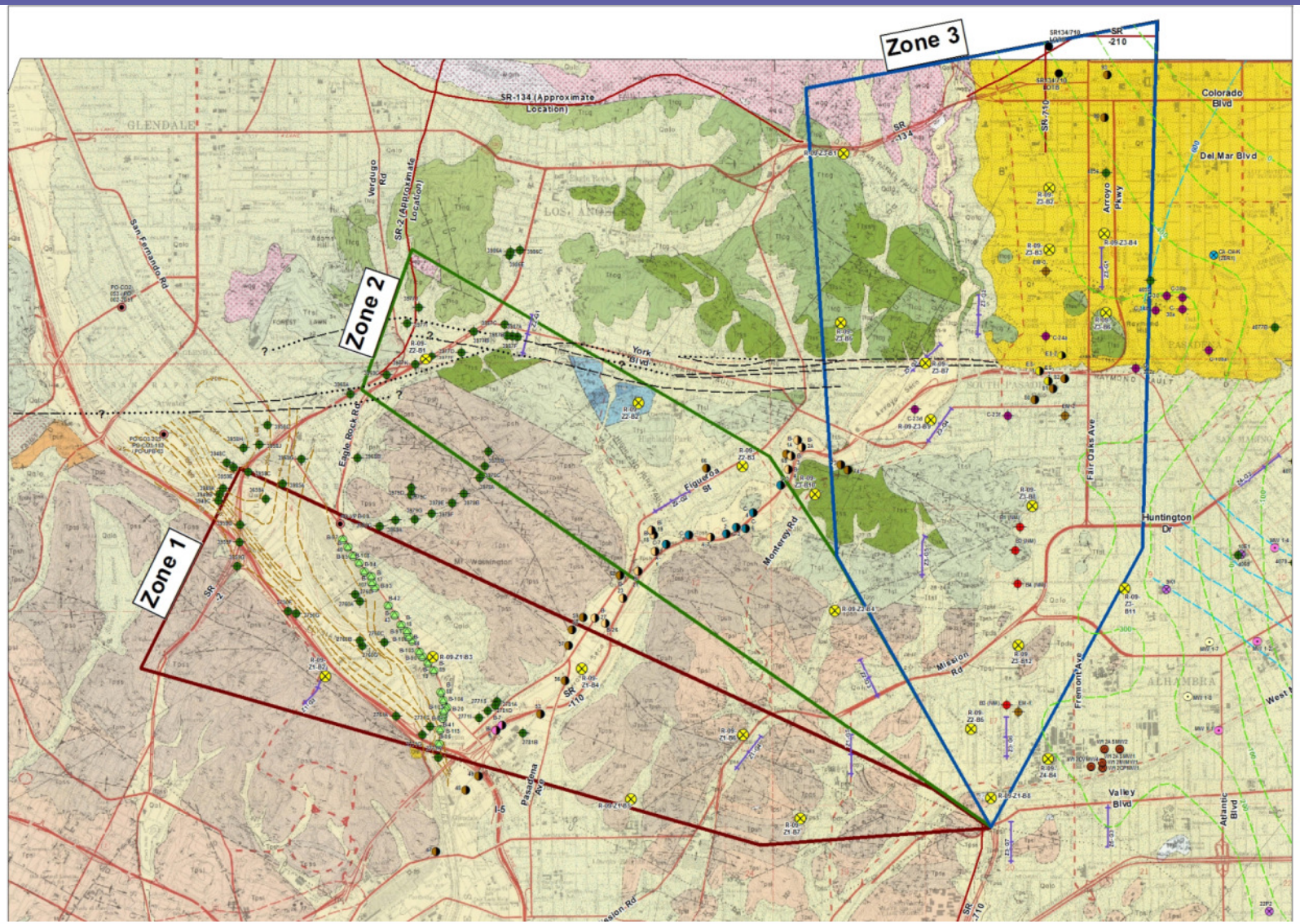
Exploration Summary

Zone	No. of Borings Compiled	No. of Borings Completed in Current Study	No. of Seismic Reflection Lines	No. of Surface Wave Lines	Approximate Length of Zone (mi)
1	74	7	4	20	5.0 – 5.5
2	61	5	3	12	5.0 – 5.5
3	40	12	6	25	4.5 – 5.0
4	34	1	2	10	6.0 – 7.5
5	77	0	2	12	9.5 – 11.0

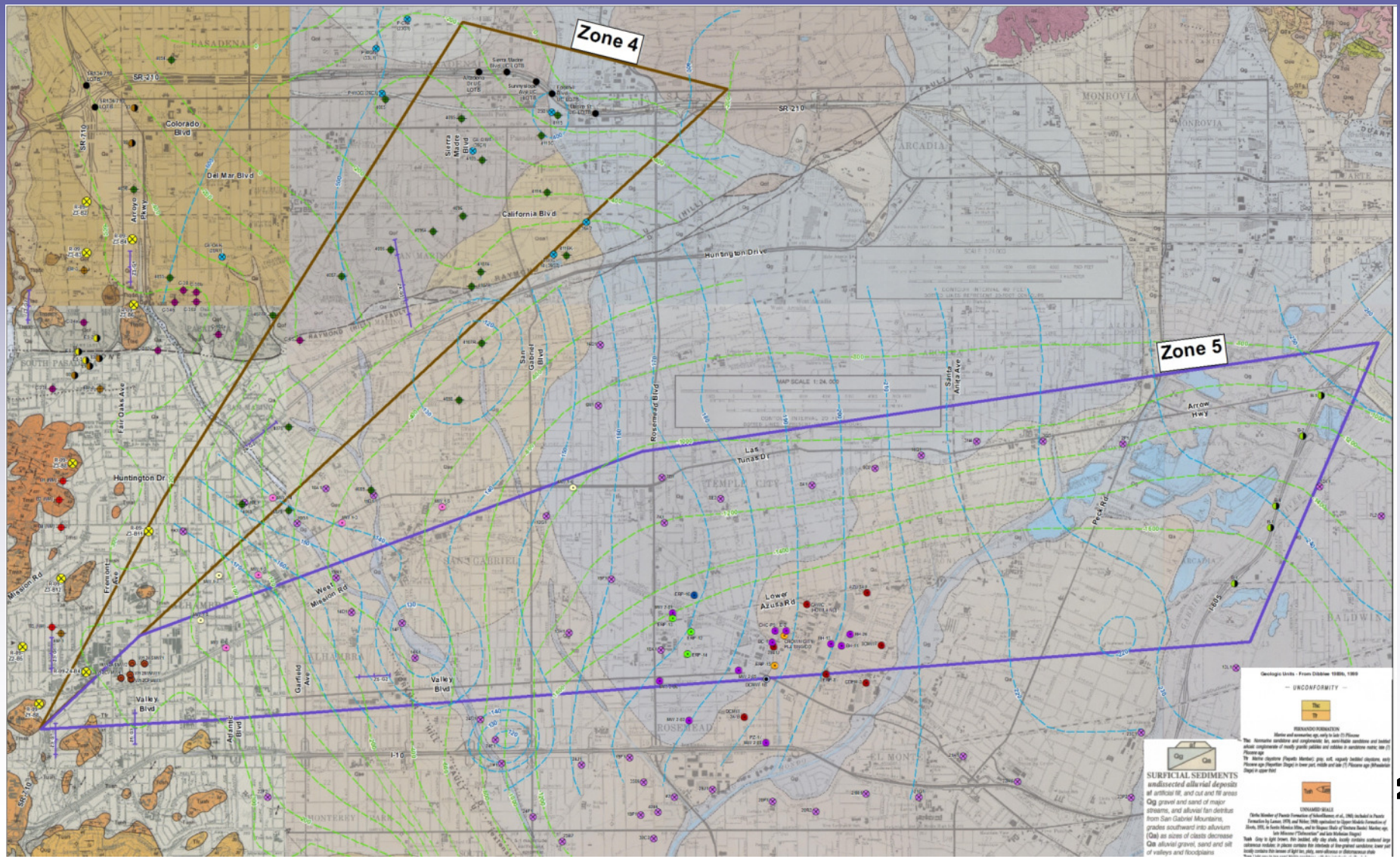
Data Collection and Review

- San Gabriel and Raymond Basin water wells
- NEIS and Avenue 45 Sewer tunnels
- Metro Gold Line
- Superfund sites
- Faulting and seismicity
- Data base search on contaminated sites
- Oil and gas information
- Geology and groundwater reports
- Caltrans as-built Log of Test Borings

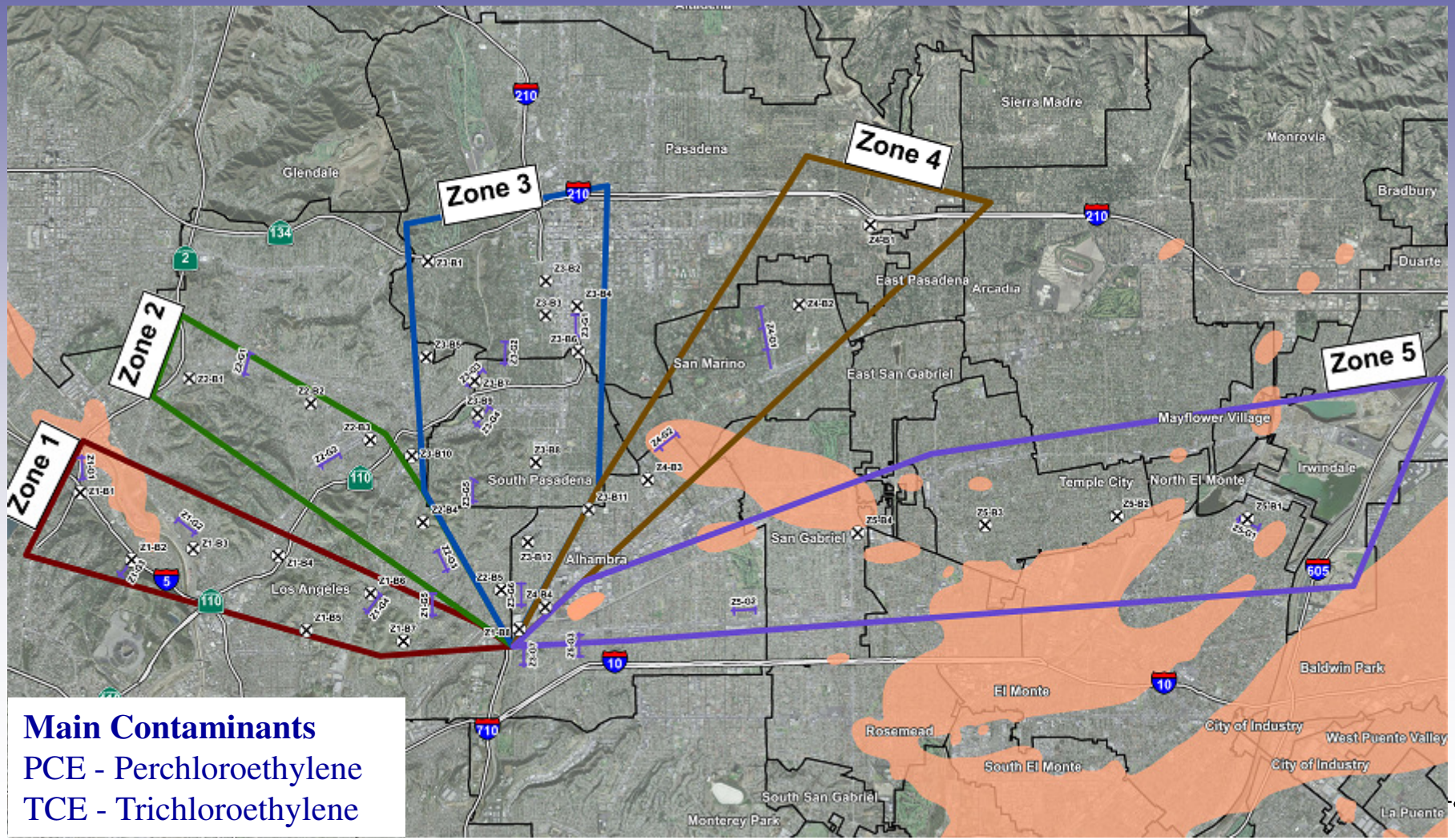
Summary of Existing and Current Data, Zones 1,2, and 3



Summary of Existing and Current Data, Zones 4 and 5



Limits of Potential Groundwater Contamination



Main Contaminants
PCE - Perchloroethylene
TCE - Trichloroethylene

Status of Contaminated Groundwater Sites

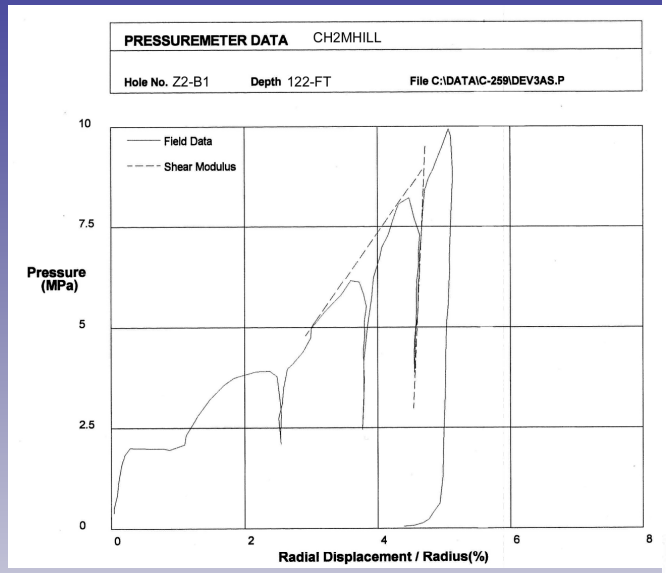
- Zone 1
  - Containment in place
  - Groundwater treatment began in 1999
- Zone 4
  - Feasibility study will start to evaluate remedial alternatives
  - Record of Decision to be completed by 2011
  - Remedial and containment plans to be developed after 2011
- Zone 5
  - Plan for containment is being evaluated, Installation of containment planned to begin 2010
  - Cleaning up of the SUPERFUND site to be determined later

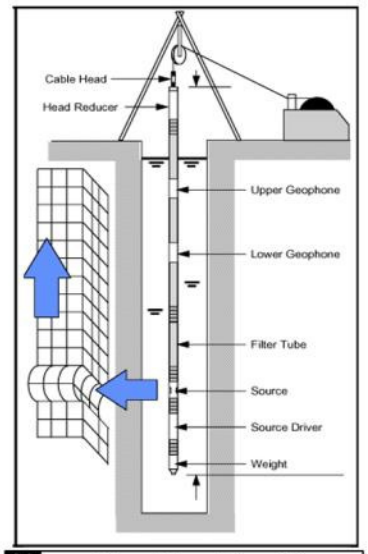
Boring Activities

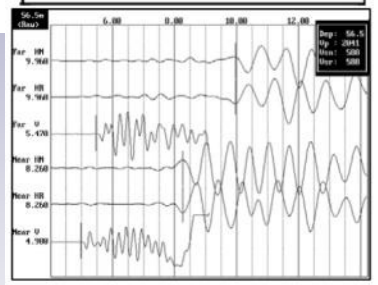
- 25 continuous core borings completed
- Vertical and Inclined (one) drilling
- Borings depths from 150 feet to 500 feet
- 22 borings were converted to piezometers

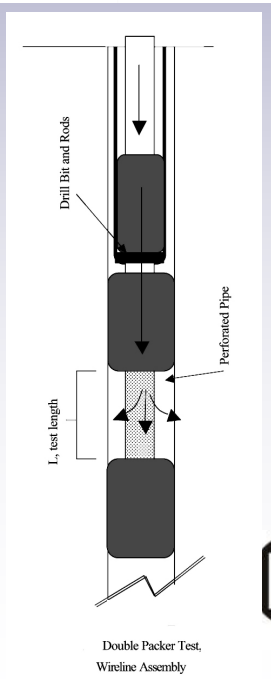
In-situ Tests Performed

- Pressure meter Tests
  - Strength and Modulus
- Packer Tests
  - Groundwater in-flow potential
- Caliper Measurements
  - Potential for flowing/squeezing
- ATV and Shear Wave Velocity
  - Rock mass characterization









Double Packer Test, Wireline Assembly

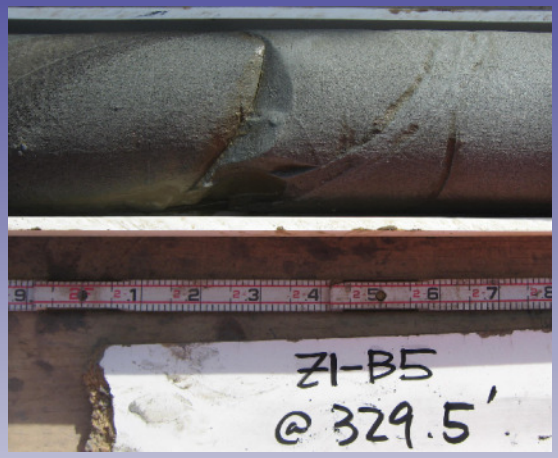
Caltrans

STATE ROUTE 710 TUNNEL TECHNICAL STUDY

Metro

Representative Core Samples Zones 1 & 2

Alluvium, Sandy Lean Clay-Zone 1



Puente Formation Sandstone-Zone 1

Puente Formation Mudstone-Zone 2

Topanga Formation Siltstone & Sandstone-Zone 2

Caltrans

STATE ROUTE 710 TUNNEL TECHNICAL STUDY

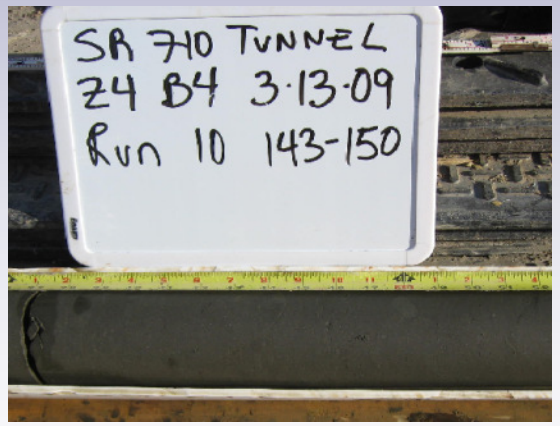
Metro

Representative Core Samples Zones 3 & 4

Quartz Diorite-Zone 3

Topanga Formation Conglomerate-Zone 3

Eagle Rock Fault Gouge-Zone 3



Fernando Formation Siltstone-Zone 4

Caltrans

STATE ROUTE 710 TUNNEL TECHNICAL STUDY

Metro

Completed Geophysical Tests

- 17 Seismic Reflection Lines
- 79 Surface Wave Lines